

To properly support a rejection under §102(a), a cited reference must disclose each and every element of the claimed invention, and each element must perform the same function in the exact same way as the claimed invention. The Kim et al., reference uses different substances which stabilize the DNA triplexes in a different way.

Therefore, in view of the above amendments, remarks, and the Declaration of Jacques Fresco, the rejection of Claims 1, 14, 16 and 29 is rendered moot. Applicants respectfully requested reconsideration of the application, withdrawal of all rejections, and that claims 1 - 32 be allowed to issue at an early date.

4. The Official Action dated April 24, 2000, rejected claims 1, 6, 14, 16, 21, and 29 under 35 U.S.C. §102(a), stating that the claimed invention was anticipated by Robles et al., (J. Am. Chem. Soc., 1996, Vol. 118, No.24, pages 5820-5821). These rejections under §102(a) are respectfully traversed for the following reasons.

The Official Action states that Robles et al., "teach stabilization of DNA triplexes by adding ethylene glycol". The present invention stabilizes triplex DNA using water structure-making substances, such as poly(ethylene glycol). (See, Declaration of Jacques Fresco, paragraph 5). Robles et al., use hexa(ethylene glycol) and do not use the water structure-making properties of glycols. (See, Declaration of Jacques Fresco, paragraphs 6, 7, and 9).

In contrast to the present invention, the glycol used by Robles et al. stabilizes third strand binding by virtue of minor groove insertion. In fact, the glycol used in Robles et al. actually weakens third strand binding when they are not tethered to the third strand. The Robles et al. method requires radically different concentrations of the "stabilizing" substance when compared with the concentrations of the poly(ethylene glycol) used in the present invention. (See, Declaration of Jacques Fresco, paragraphs 6, 7, and 9).

To properly support a rejection under §102(a), a cited reference must disclose each and every element of the claimed invention, and each element must perform the same function in the exact same way as the claimed invention. The Robles et al., reference uses different substances, at different concentrations, which stabilize the DNA triplexes in a different way.

Therefore, in view of the above amendments, remarks, and the Declaration of Jacques Fresco, the rejection of Claims 1, 6, 14, 16, 21, and 29 is rendered moot. Applicants respectfully

requested reconsideration of the application, withdrawal of all rejections, and that claims 1-32 be allowed to issue at an early date.

5. The Official Action dated April 24, 2000, rejected claims 1, 2, 4, 5, 14, 16, 17, 19, 20, and 29 under 35 U.S.C. §102(b), stating that the claimed invention was anticipated by Kiyama et al., (Nucleic Acids Research, 1995 Feb 11, Vol. 23, No. 3, pages 452-458). These rejections under §102(b) are respectfully traversed for the following reasons.

The Official Action states that Kiyama et al., "teach the stabilization of . . . triplexes in the presence of a cationic detergent . . .". The present invention stabilizes triplex DNA using water structure-making substances. (See, Declaration of Jacques Fresco, paragraph 5). Kiyama et al., do not use the water structure-making properties of the substances. (See, Declaration of Jacques Fresco, paragraphs 6, 7, and 10)

Kiyama, et al., teach the use of a low concentration of to protect the duplex region linking two triplex segments. Kiyama do not show that the resulting stabilization is due triplex stabilization. Other mechanisms are likely, such as non-sequence specific interaction of the single strand linker with the non-Pu-Pyr segment of the duplex. None of the possible mechanisms could be from water structure-making activities – the concentrations of stabilizing substances use by Kiyama, et al., are too low to demonstrate the water –structure-making activity used in the present invention. (See, Declaration of Jacques Fresco, paragraphs 6, 7, and 10).

To properly support a rejection under §102(b), a cited reference must disclose each and every element of the claimed invention, and each element must perform the same function in the exact same way as the claimed invention. The Kiyama et al., reference uses different concentrations of stabilizing substances, which stabilize the DNA triplexes in a different way.

Therefore, in view of the above amendments, remarks, and the Declaration of Jacques Fresco, the rejection of Claims 1, 2, 4, 5, 14, 16, 17, 19, 20, and 29 is rendered moot. Applicants respectfully requested reconsideration of the application, withdrawal of all rejections, and that claims 1-32 be allowed to issue at an early date.

6. The Official Action dated April 24, 2000, rejected claims 1,11-14, 16, and 26-29 under 35 U.S.C. §102(b), stating that the claimed invention was anticipated by D'Souza et al.,

(Bioorganic and Medicinal Chemistry Letters, 1994, Vol. 4, No. 8, pages 965-970). These rejections under §102(b) are respectfully traversed for the following reasons.

The Official Action states that D'Souza et al., "teach the strength of linear triple helical complexes as being enhanced or stabilized with ethanol...". The present invention stabilizes triplex DNA using water structure-making substances. (See, Declaration of Jacques Fresco, paragraph 5). D'Souza et al., describe that ethanol destabilizes triple helices in which a circle containing two pyrimidine sequence elements bind to a homopurine single strand sequence. They attribute this behavior to the enhanced inter-strand charge repulsion due to the effect of ethanol on the dielectric constant of the medium. This effect of ethanol is opposite to the ethanol solvent effect of the present invention. (See, Declaration of Jacques Fresco, paragraphs 6, 7, and 11)

In fact, D'Souza et al. show that use of ethanol destabilizes third strand binding, and make no mention of ethanol or any other water structure-making substances that stabilize triplexes. (See, Declaration of Jacques Fresco, paragraphs 6, 7, and 11)

To properly support a rejection under §102(b), a cited reference must disclose each and every element of the claimed invention, and each element must perform the same function in the exact same way as the claimed invention. The D'Souza et al., reference uses different concentrations of stabilizing substances, which stabilize different helices in a different way, and, actually teach the destabilization.

Therefore, in view of the above amendments, remarks, and the Declaration of Jacques Fresco, the rejection of Claims 1,11-14, 16, and 26-29 is rendered moot. Applicants respectfully requested reconsideration of the application, withdrawal of all rejections, and that claims 1-32 be allowed to issue at an early date.

7. The Official Action dated April 24, 2000, rejected claims 1,14-16, and 29-30 under 35 U.S.C. §102(b), stating that the claimed invention was anticipated by Shimizu et al.,(Biochemistry, 18 Jan 1994, Vol. 33, No. 2, pages 606-613),. These rejections under §102(b) are respectfully traversed for the following reasons.

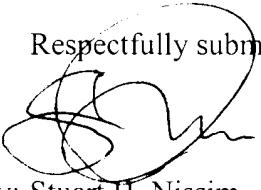
The Official Action states that Shimizu et al., "teach introduction of base analogs into triplex-forming oligonucleotides and subsequent examination of stability of the triplexes." The present invention stabilizes triplex DNA using water structure-making substances. (See,

Declaration of Jacques Fresco, paragraph 5). Shimizu et al., describe enhancing strand binding stability by using particular base analogs as part of the third strand itself; these effects are not related to any water structure-making ability of the solution additives of the present invention. (See, Declaration of Jacques Fresco, paragraphs 6, 7, and 12). Furthermore, the base analogs Shimizu et al. studied did not significantly enhance triplex stability over those formed using canonical bases. (See, Declaration of Jacques Fresco, paragraphs 6, 7, and 12)

To properly support a rejection under §102(b), a cited reference must disclose each and every element of the claimed invention, and each element must perform the same function in the exact same way as the claimed invention. The Shimizu et al., reference uses different stabilizing substances, which stabilize in a different way and to a different (lower) degree..

Therefore, in view of the above amendments, remarks, and the Declaration of Jacques Fresco, the rejection of Claims 1,14-16, and 29-30 is rendered moot. Applicants respectfully requested reconsideration of the application, withdrawal of all rejections, and that claims 1-32 be allowed to issue at an early date.

Respectfully submitted,



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